

**AN EVALUATION
OF A
SAFETY BELT INTERLOCK SYSTEM**

FEBRUARY 1971



**National Highway Traffic Safety Administration
Washington, D.C. 20590**

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OF A
SAFETY BELT INTERLOCK SYSTEM

By

Michael Perel and Peter N. Ziegler

National Highway Traffic Safety Administration
Research Institute

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We are particularly indebted to Dr. Paul Fine for the development of the attitude scale that played an essential role in the analysis of the results.

SUMMARY

Five variations of a special safety belt system were installed in General Services Administration cars loaned to Federal employees for business trips. The important feature was an interlock device which prevented the starting motor from operating unless the safety belts were fastened. If the belts were unfastened once the engine started, a flashing light and in some systems a buzzer also would be activated. The interlock/alarm was connected to the appropriate belts and included the light-buzzer combination as follows:

- System 1 - Lap belt and warning light
- System 2 - Lap belt, warning light, warning buzzer
- System 3 - Lap belt, shoulder belt, warning light
- System 4 - Lap belt, shoulder belt, warning light, warning buzzer
- System 5 - Special three point belt with inertial shoulder harness, warning light, warning buzzer

Acceptance of the interlock systems was determined by having a dispatcher give the drivers an explanatory memorandum and a questionnaire designed to assess his reactions to the interlock system. The results indicated no significant difference in acceptance between any of the five systems. Overall, there was a large proportion of drivers who stated they would accept an interlock type, safety belt system. Even more encouraging was the finding that a large proportion of drivers who have low safety belt usage in their private cars (less than 50 percent) expressed a positive attitude towards the interlock system. Ninety-five percent of the 120 people using the cars equipped with the interlock system drove with the seat belts fastened. This was a 28% increase over the 67% of people who reported using their belts more than half the time in their private automobiles. These results are indicative that most drivers would accept or even welcome a device in their vehicles that would require or clearly remind them to fasten their safety belts. Such a device would have a significant impact on increasing safety belt usage in those vehicles so equipped. However, because of the unrepresentative characteristics of the sample (predominantly male, highly educated, frequent seat belt users, etc.), it is difficult to generalize the findings of this study to the national driving population. Therefore further testing of additional segments of the population would be desirable.

INTRODUCTION

Lap belts are now available in about one-half to two-thirds of all passenger cars, but the belts are only being used 30-40 percent of the time, on the average. Shoulder belts are available in about 20% of all passenger cars, but their usage is significantly lower than that for lap belts. The National Safety Council estimates that if everyone used belts at all times, 8,000 to 10,000 lives would be saved annually and severe injuries would be significantly reduced for countless others.

In the past, various attempts have been made to encourage a wider usage of safety belts. However, the public education and advertisement campaigns have thus far not achieved the desired increase in usage. Another approach to increase the use of safety belts is to require the car occupant to wear the belt. This can be accomplished with a device which prevents the car from starting unless the occupants have their belts fastened. Such a device was developed by the safety belt industry and has received much interest from the automobile manufacturers and the National Highway Traffic Safety Administration.

To provide some background information for the Safety Administration and the safety belt industry, this study was conducted to make preliminary inferences about the public's attitudes towards this method of increasing safety belt usage. Such a system is obviously forceful in nature, a fact which constitutes both its strength and its apparent weakness.

The optional aspect of current seat belt systems implies that they are "A nice little extra if you choose" and that there is no real need for their use. If occupants must buckle-up in order to start their cars, this optional aspect would be removed and usage would become as much a part of driving as turning on the engine. On the other hand, resistance to such a built-in requirement to buckle-up before moving the car might be so great as to defeat any hope of making seat belt usage a necessary part of driving.

METHODOLOGY

1. Safety Belt Systems

Five variations of seat belt systems were installed in Government cars. These cars consisted of eighteen, 1970 Ford Falcons. In Systems 1, 2, 3, and 4 the lap belts were of the self-locking type and the shoulder harness connected into a keyhole in the lap belt buckle. In system 5, a special three-point belt incorporating an inertial shoulder harness¹ was installed. Each of the systems was designed to prevent the starter motor from operating unless the safety belts were fastened. If the driver attempted to start the car before connecting his belts, a warning alarm (a flashing light and in some systems also a buzzer) would be activated. If the belts were unfastened once the engine started, the alarm would again be activated, but the engine would continue to run. The different warning devices and the type of safety belt that had to be fastened to start the car, are listed below for each system. For example, in system 1 the interlock was connected to the lap belt only and no buzzer was connected to the warning system.

- System 1 - Lap belt and warning light
- System 2 - Lap belt, warning light, warning buzzer
- System 3 - Lap belt, shoulder belt, warning light
- System 4 - Lap belt, shoulder belt, warning light, warning buzzer
- System 5 - Special three point belt with inertial shoulder harness, warning light, warning buzzer

2. Subjects

The test cars were placed in the General Services Administration's car pool where they were loaned to Federal employees for business trips. The dispatcher at the motor pool would assign one of the special cars only if the car was going to be utilized for less than three or four days. The dispatcher informed the driver that the car had a special safety belt system and then gave him an explanatory memorandum (See Appendix A) and a questionnaire (See Appendix B).

3. Questionnaires

The questionnaires given to the drivers were designed to assess his reactions to the safety belt interlock system, the warning system, and to obtain some biographical information about the user. The study was conducted for about a four-month period, during which time 174 questionnaires were collected. Of these questionnaires, 21 were not filled out properly or completely and 33 were not counted in the results because of system malfunctions. Since the interlock system was a prototype unit, it was prone to breakdowns from broken wires and switches. Thus, 120 questionnaires were left for analysis.

¹The shoulder belt was connected to an inertial reel allowing the occupant's upper torso free movement. However, any sudden forward movement by the occupant would lock the reel and restrain any further forward motion.

RESULTS AND DISCUSSION

1. Attitudes Towards the Interlock System

The three critical questions and their responses are shown in Table 1.

Table 1
Acceptance of the Interlock System

9.	Do you believe this interlock is a good way to increase safety belt usage?	<u>Yes</u> 81% (97)	<u>No</u> 19% (23)	
10.	If this interlock device came as standard equipment in your private car, would you	<u>Use It?</u> 60% (72)	<u>Modify It?</u> 30% (36)	<u>Remove It?</u> 10% (12)
11.	If all new cars were <u>required</u> to have such a device, would you object?	<u>Yes</u> 29% (35)	<u>No</u> 69% (83)	<u>No Answer</u> 2% (2)

Thus, 81% agree that the interlock is "a good way" to increase usage, but it was clear that many of these would not want it for themselves. A large majority (69%) would not object if new cars were required to have an interlock device. Furthermore, many respondents used the blanks provided to make some additional positive remark about the system. The comments ranged from general praise ("A step in the right direction"; "A great safety device"; "At first annoying, but unquestionably a sound system") to specific points of merit ("Excellent reminder"; "A little inconvenient, but sure encourages use of belts")

To obtain a quantitative estimate of attitude to the system, the following scoring method was devised:*

- Question 9 - 2 points for a yes response, 0 for no
- Question 10 - 2 points for yes; 1 for modify but use; 0 for removing it
- Question 11 - 3 points for no; 0 for yes
- 2 points were added for a positive comment to questions 9 or 11
- 3 points were added for a remark in questions 9 or 11 that the system would make people do what they might not do otherwise.

These three questions (9, 10, and 11) were utilized since they were designed primarily to assess attitudes toward the systems tested. Questions 9 and 10 were weighted equally (2 points for a positive response) but

*Our thanks to Dr. Paul A. Fine for development of this scale

question 11 was given 3 points for a positive response. This was due to question 11 using the term requirement which is much stronger than the wording in the other two questions. A positive response to the system (checking the NO blank) would indicate rather strong support.

This scoring system produced a scale from 0 to 12. A careful examination of the overall intent conveyed by the entire questionnaire led to the following cut-off points: from 0-4, people were classified as rejectors of the system; from 5-8, acceptors of the system; from 9-12, supporters of the system. Thus, acceptors, on the average, would answer positively to questions 9, 10 and 11, but would not make any comments. Supporters of the system would be those who made some positive comment in addition to the positive responses to questions 9, 10, and 11. Rejectors were those who might have felt the device would increase usage but apparently did not want such a device in their cars. The distribution of cases by attitude score is shown in Figure 1. A summary of the attitude scores are presented in Table 2, which shows that a total of 71% of the sample would accept or support the system.

Table 2
Rejectors, Acceptors, and Supporters for the Interlock System

	<u>%</u>	<u>Number in Category</u>
Rejectors (0-4)	29	35
Acceptors (5-8)	42	50
Supporters (9-12)	29	35

Interaction Effects With Safety Belt Usage

Additional significance is given to the results in Table 2 from the findings of the analysis relating private car safety belt usage to acceptance of the system.

Table 3
Private Car Safety Belt Usage Cross Tabulated With Interlock Attitude Scale

	<u>Reject</u>	<u>Accept</u>	<u>Support</u>	<u>Total</u>
High Lap Belt Usage (Greater than 50% of time)	(0-4) 30% (23)	(5-8) 37% (28)	(9-12) 33% (25)	67% (76)
Low Lap Belt Usage (Less than 50% of time)	18% (7)	56% (21)	26% (10)	33% (38)
High Shoulder Belt Usage	9% (1)	55% (6)	36% (4)	21% (11)
Low Shoulder Belt Usage	35% (14)	45% (18)	20% (8)	79% (40)

**NUMBER
OF
QUESTIONNAIRES**

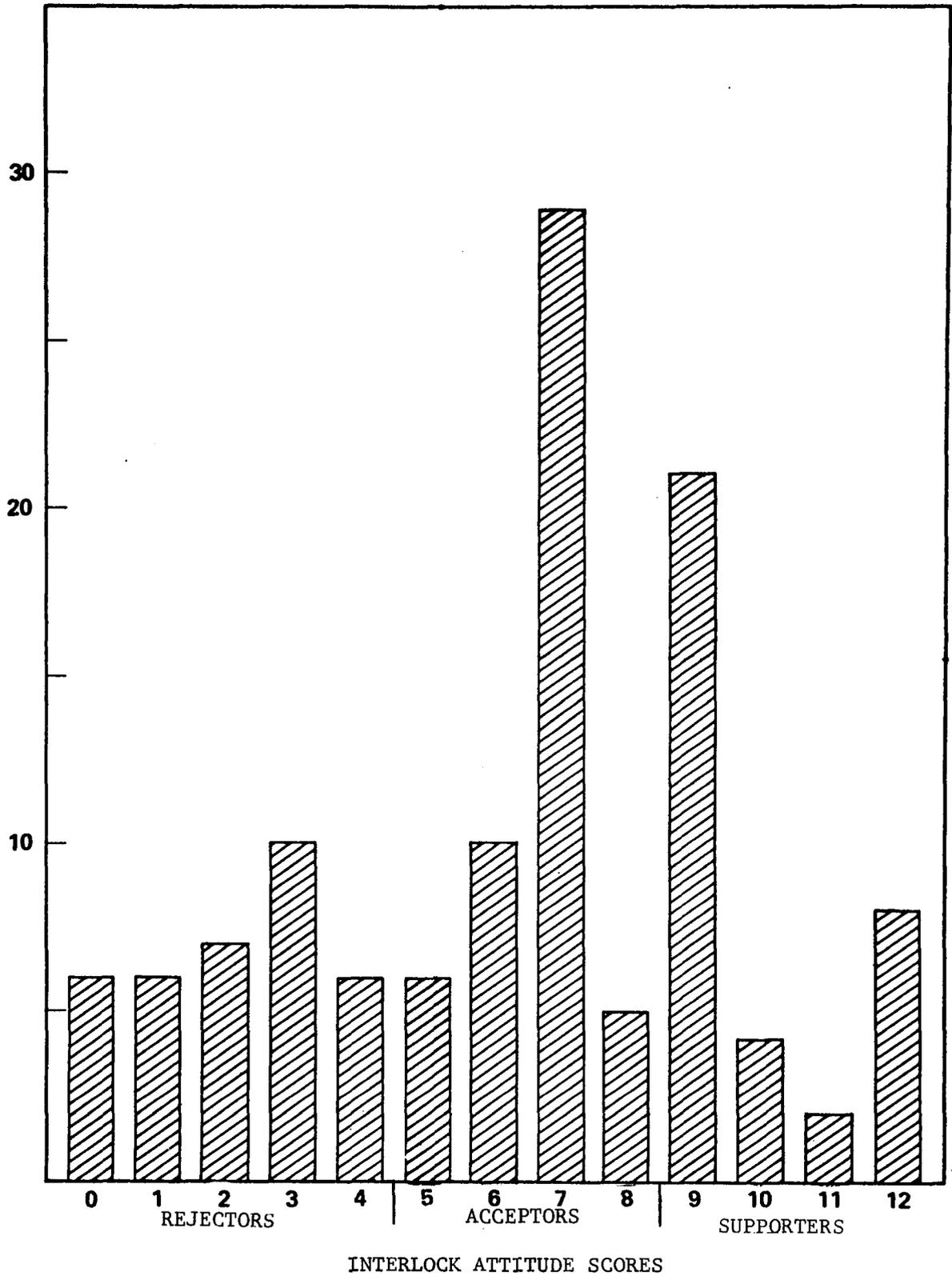


Figure 1: Frequency Distribution of Acceptance of Seat Belt Interlock System

Scores on the 0-12 point scale were tabled according to private car restraint system usage and are presented in Table 3. Out of those that wear their lap belts more than half the time (67 percent of the sample tested), 70 percent would accept or support this interlock system. An unexpected finding was that 82 percent of those that wear their belts less than half the time would also accept or support such a system. It appears that this latter group wants a forceful reminder to buckle up.

Shoulder belts were available in 55 percent of the 114 private cars equipped with lap belts. Only 13 percent of the high lap belt users were also high shoulder belt users. Most of those classified as low users of shoulder belts never used their harness. The interesting thing with this group of low shoulder belt users is that 65 percent of them would accept or support the interlock system (Table 3).

Reasons for Rejection of the Interlock System

In order to determine some of the reasons that the interlock system was rejected, the questionnaires of the 30 percent of rejectors from the high lap belt users were reviewed. It appears that a majority disliked the system because of the need to wear the shoulder harness, which they felt was uncomfortable and a nuisance to fasten. They also disliked being required to fasten the belts when moving the car only a few hundred feet or maneuvering in tight spaces. A few others complained that the self-locking lap belts became too tight. These results support an interpretation that uncomfortable and annoying shoulder harnesses were a factor in the rejection of the system.

The results from Table 2 can be considered a conservative measure of degree of acceptance in view of the fact that the experimental systems presented negative operational factors to some of the drivers, as shown in Table 4. These results indicate that the confusion of operating the system and the inconveniences offered by the safety belts made the system less appealing to the drivers. If these problems could be eliminated, greater acceptance of the interlock would probably be achieved.

Table 4
Factors Related to the Operation of the Safety Belt/Interlock System

<u>Question</u>	<u>Yes</u>	<u>No</u>	
1. Were there any difficulties or confusion when attempting to start the car?	25% (30)	75% (88)	
5. Did system offer any objectional inconveniences?	(because of interlock/alarm)	(because of belts, or things not directly related to the interlock/alarm)	<u>No</u>
	7% (8)	37% (44)	56% (66)

For instance, in Question 5, 37% of 118 people had complaints about the safety belt and other aspects of the system not related to the interlock/alarm. The most common complaints were that the self locking lap belts were uncomfortable because they would become too tight and that it was difficult to adjust the belts properly. The other major complaint concerned the inconvenience of fastening the belts for short drives (less than 100 feet) or for paying tolls. Some of the above problems would probably be solved with better designed safety belt systems which would be more acceptable to the drivers.

There were indications that some people who objected to the system would attempt to disconnect it if it were standard equipment in their automobile. This was clearly evident in the response to Question 10 (Table 1) which showed that 10 percent of the sample (12 people) would have taken the alarm out of their car. Six of these 12 use the lap belts in their private car more than 50 percent of the time; four are in the low lap belt usage group; one did not have belts in his private automobile; and one did not answer the question. There was no noticeable trend as far as which of the 5 systems was concerned. An analysis of the comments of the six high usage drivers showed that three felt it was irritating to fasten the belts when moving the car only a few feet and two complained that the lap belt was too tight. Thus, it again appears that the interlock, which "forces" a driver to fasten his belt everytime the car is to be moved, is an objectionable device even to some safety belt users.

Most of the comments and suggestions by the 30% of the sample who stated in Question 10 that they would try to modify the system were related to redesigning the safety belts, especially the shoulder harness, to make them more comfortable and easier to fasten.

The other major suggestions were to eliminate the shoulder harness, to make the shoulder belt usage optional, and to incorporate a disconnect switch for short distance drives.

Only four respondents voiced specific objections to the interlock itself. These were brought out in the comments to question 9 (Table 1). Of those who did not feel the device was a good way to increase safety belt usage, some remarked that people should not be forced to use their belts and that people who are safety minded would wear their belts anyway.

2. Attitudes Towards Warning Systems and Lap vs Lap-Plus-Shoulder Belts

Table 5 lists the total number of questionnaires in each attitude group for each system tested. It also shows the average attitude score for each system. No significant difference was found using an analysis of variance between any of the five systems using the attitude scores as the criterion measure. ($F=.03$; $\alpha = .1$).

Table 5
Interlock Attitude Scores by Systems Tested

	System 1 Lap Belt-Light	System 2 Lap Belt-Light-Buzzer	System 3 Lap Belt-Shoulder Belt-Light	System 4 Lap-Shoulder Light Buzzer	System 5 Three Point Belt
Average Attitude Score	6.4	6.6	5.9	6.5	6.1

Number of Respondants	S* A* R*	S* A* R*	S* A* A*	S* A* R*	S* A* R*
	11 10 10	9 8 5	4 7 5	3 8 3	8 17 12

*S - Supporters

*A - Acceptors

*R - Rejectors

Considering the extremely low incidence of shoulder belt usage (and the high benefits to be obtained from such usage) it is of great interest that the people in systems requiring the use of shoulder belts (3,4&5) were as accepting of the interlock as those who had only the lap belt to contend with. This result augurs well for the future of properly designed shoulder belts.

These results shed no light on which, if any, warning system is superior. Since a control group (no warning system) was not used, it is not known from

these data whether the warning systems had an effect on the initial fastening of the belts. The warning system was primarily to motivate the refastening of the belts if they were unfastened once the car was started.

The responses related to warning system preference and the refastening of the safety belts if they were unfastened are presented in Table 6.

Table 6
Effects of the Warning Systems

	<u>Yes</u>	<u>No</u>	<u>No Answer</u>	
6A. Would you have preferred only a light and no buzzer? (Systems 2, 4, 5)	36% (26)	60% (44)	4% (3)	
6B. Were you reminded to wear your belt by the light and buzzer? (Systems 2, 4, 5)	63% (46)	37% (27)	0	
6C. Were you reminded to wear your belt by the light? (Systems 1, 3)	62% (29)	38% (18)	0	
8. Did you remove any of the safety belts after the car started and drive without the belts fastened?	17% (21)	76% (91)	7% (8)	
8A. Did you fasten the belt again? (Systems 2, 4, 5) (Systems 1 & 3)	(8) (6)	(2) (4)	(1)	
8B. Did you refasten the belts because of the flashing light and buzzer? (Systems 2, 4, 5)	<u>Light</u> 1	<u>Buzzer</u> 0	<u>Both</u> 4	<u>No</u> 3
8B. Did you refasten the belts because of the flashing light? (Systems 1, 3)	<u>Yes</u> 0	<u>No</u> 6		
8C. Do you believe that the light alone would have been sufficient to encourage you (Systems 2, 4, 5)	5	2		
8D. Would you have preferred only a light and no buzzer? (Systems 2, 4, 5)	3	5		

The results indicated that 36% would have preferred no buzzer (6A). Questions 6B and 6C were difficult to interpret by the subjects since they were also reminded or forced to fasten the belts in order to start the car. Consequently this question does not indicate whether the light and buzzer reminded subjects to fasten their belts. However, Question 6A does provide opinion as to the preference of a light and buzzer. A few people remarked that the light alone could easily be ignored. This was probably due to the fact that the light could hardly be seen in daylight since it rested on the top of the dashboard and was masked by the ambient light. Additional evidence for or against the buzzer or light was expected from the answers to Question 8B, C, and D. Unfortunately, not enough people removed and refastened their belts to obtain a significant number of responses to these questions. A number of subjects did remark that the buzzer was annoying but one would think that if the system is to be effective, it would be desirable for the alarm to be sufficiently annoying so it cannot be ignored. On the whole, it appears that a buzzer is the logical choice of warning devices for use in the production model of the system if only one warning device were to be selected.

3. Characteristics of Sample

To determine the characteristics of the drivers tested, some of the biographical information was analyzed. Table 9 shows that the sample was predominantly male, highly educated, and fairly evenly distributed over age groups above 26 years. Another point to note is that 67 percent of the drivers claimed to use their seat belts more than half the time. This is a much higher figure than the estimated national average of about 30 to 40 percent. The characteristics of the sample tested, therefore, are not representative of the national driving population. In view of these facts, the findings of this study should be interpreted with some caution until some testing of other segments of the population has been accomplished. Unfortunately, the number of people who did not fill out questionnaires was not determined. However, according to the dispatcher, only a few drivers failed to turn in a questionnaire. Thus, the results were probably not greatly biased by the omission of these few questionnaires.

Age and Education Effects

In Table 7, the attitude scores were tabulated by age and grouped into the three categories described previously. A Chi Square Test was performed to determine whether there was any significant age difference as far as attitude towards the safety belt interlock was concerned. The results of this test indicated that there was no significant difference between any of the age groups.

Table 8 presents the attitude scores grouped by education. Because of the uneven distribution of scores and the low number of scores in some of the categories, a Chi Square Test could not be validly performed on the education data. The data does show the high education level of the sample.

Table 7
Interlock Attitude Scale Tabulated by Age
(Percent and Number in Category)

	<u>Reject (0-4)</u>	<u>Accept (5-8)</u>	<u>Enthusiastic (9-12)</u>	<u>Totals</u>
Under 25	35% (5)	43% (6)	22% (3)	14
26-35	29% (8)	50% (14)	21% (6)	28
36-45	30% (9)	37% (11)	33% (10)	30
46-55	25% (6)	50% (12)	25% (6)	24
56-65	26% (5)	26% (5)	48% (9)	19

Table 8
Interlock Attitude Scores Tabulated by Education
(Percent and Number in Category)

	<u>Reject (0-4)</u>	<u>Accept (5-8)</u>	<u>Enthusiastic (9-12)</u>	<u>Totals</u>
High School Not Completed	0% (0)	50% (2)	50% (2)	4
High School	44% (7)	44% (7)	12% (2)	16
Incomplete College	17% (4)	54% (13)	29% (7)	24
4 or More Years College	32% (24)	32% (24)	32% (24)	75

Table 9
Biographical Data

	<u>Number</u>	<u>Percent of Sample</u>	<u>Percent of Population</u>
Drivers	110	92%	-
Passengers	10	8%	-
<hr/>			
AGE: 16 - 25	14	12%	21%*
26 - 35	28	23%	20%
36 - 45	30	25%	20%
46 - 55	24	20%	12%
56 - 65	19	16%	9
<hr/>			
SEX: Male	116	97%	58%*
Female	4	3%	42%
<hr/>			
Education: High School Not Completed	4	3%	46%**
High School	16	13%	34%
Incomplete College	24	20%	10%
4 or More Years College	75	63%	11%
<hr/>			
Married	103	86%	66%**
Single	17	14%	34%

*For National Driving Population
Source: Accident Facts 1970

**For National Population
Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1970 (91st Edition)

CONCLUSIONS AND RECOMMENDATIONS

The findings of this preliminary study give strong evidence that the interlock/alarm was well received by a majority of the respondents. In the overall results, 71% of the sample would accept or support the interlock/alarm system. Moreover, out of the 38 drivers who use the lap belts in their private car less than 50 percent of the time, 82% would accept or support the systems tested. Only 5 percent of the sample disconnected their safety belts and continued to drive that way. The possibility of significantly increasing safety belt usage with an interlock type device thus appears great. Where objections do exist, the results suggest that they can be eliminated by redesigning the safety belt system. Most of the people expressed complaints and criticisms directed at the discomfort caused by wearing the shoulder harness, the difficulty and annoyance of fastening the lap and shoulder belts, especially for short distance drives, and the discomfort of the lap belt which became too tight. Only a few people objected outright to being required to fasten their safety belts or expressed absolute refusal to wear a belt. The above findings suggest the importance of undertaking research into the human engineering of restraint systems, which can be the basis for appropriate standards. A restraint system which is simple, comfortable, and quick to fasten and adjust may eliminate the objections many people raise towards safety belts. A properly designed restraint system combined with some type of interlock/alarm device would probably increase usage substantially. It was noted that a buzzer is a much better method of reminding people to fasten their belts since the light alone could easily be ignored. Comments from the questionnaire suggested that an interlock device has some legitimate drawbacks. These deficiencies could be avoided by a system that only has the alarm and no interlock. Such a system would not prevent the car from starting but would be a clear reminder (buzzer and light) that the belts were not fastened. However, whether the lack of the compulsory feature would compromise the effectiveness of the interlock remains to be studied.

One point of caution should be noted. Because of the unrepresentative nature of the respondents, it would not be valid to generalize from the findings of this pilot study to the national driving population. But since there was such a strong indication that the interlock/alarm system was well accepted by a majority of the respondents, further research, to explore the attitudes of a more heterogeneous group towards this safety belt system, would be extremely worthwhile.

Even though the systems tested were of a prototype nature and were subject to malfunction, it is clear that production models will need appropriate engineering design to improve their reliability. Emphasis should be placed on this reliability aspect, not only in related performance standards but also at the initiative of the manufacturers. An unreliable device could have a negative effect on safety belt usage rather than a positive one.

APPENDIX A

EXPLANATORY MEMORANDUM GIVEN TO DRIVERS

UNITED STATES GOVERNMENT

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY SAFETY BUREAU

Memorandum

TO : Drivers and Passengers Using GSA Cars Equipped
with Ignition Interlock Devices

FROM : Director
National Highway Safety Bureau

SUBJECT: Evaluation of a new safety belt interlock system

DATE: JUN 12 1970

In reply refer to: 43-44

The Department of Transportation and the General Services Administration in cooperation with the American Safety Belt Council are conducting a study of safety belt interlock systems.

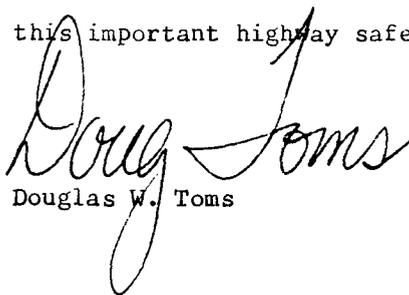
As you know, there is overwhelming evidence to demonstrate that, when used properly, safety belts are highly effective in reducing the injuries and deaths that occur as a result of highway crashes. One unfortunate aspect of this otherwise bright picture is that some vehicle drivers and passengers do not use their seat belts. Consequently, as part of our objectives to reduce the terrible number of highway deaths and injuries, we are exploring all reasonable means of increasing the use of seat belts. The system you are being asked to evaluate is aimed to achieve such increased use.

The car you are about to use has been modified so that it will not start unless the driver and also any passengers fasten their safety belts. If the belts should be disconnected once the car starts, the motor will continue to run but the reminder light on the dashboard will flash. In some cars, a buzzer will also sound.

We would appreciate your taking a few minutes when you are finished using the car to fill out the attached questionnaire. Preferably, the questionnaire should be completed in the dispatcher's office when the car is returned.

If you are a passenger, and will not be present when the car is returned, you may complete the questionnaire shortly before you leave the car and give it to the driver, who can turn it in to the dispatcher.

I wish to thank you for your cooperation in this important highway safety project.


Douglas W. Toms



BUY U.S. SAVINGS BONDS REGULARLY ON THE PAYROLL SAVINGS PLAN

APPENDIX B

QUESTIONNAIRE

(" _ _ _*" DENOTES THOSE QUESTIONS OR PORTIONS OF
QUESTIONS THAT WERE DELETED ON THE QUESTIONNAIRE
GIVEN TO USERS OF SYSTEMS 1 AND 3)

Please check the appropriate boxes:

<u>Occupant</u>	<u>Age</u>	<u>Sex</u>	<u>Education</u>	<u>Occupation</u>
Driver	<input type="checkbox"/> _____	Male <input type="checkbox"/>	Completed Years in High School _____	
Front Passenger	<input type="checkbox"/>	Female <input type="checkbox"/>	Completed Years in College _____	Married <input type="checkbox"/>
				Single <input type="checkbox"/>

1. Were there any difficulties or confusion when attempting to start the car?

<u>Yes</u>	<u>No</u>	If Yes, please explain _____
<input type="checkbox"/>	<input type="checkbox"/>	_____

2. Approximate total length of time driving or riding in car before answering questionnaire? _____

3. Approximate number of miles driven? _____

4. Did the system function properly?

<u>Yes</u>	<u>No</u>	If No, please explain _____
<input type="checkbox"/>	<input type="checkbox"/>	_____

5. Did the system offer any objectionable inconveniences?

<input type="checkbox"/>	<input type="checkbox"/>	If Yes, please explain _____

- 6.(a) Would you have preferred only a light and no buzzer?

<input type="checkbox"/>	<input type="checkbox"/>	
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- (b) Were you reminded to wear your belt by the light and buzzer?

<input type="checkbox"/>	<input type="checkbox"/>	
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7. Which belts do you fasten before starting car?

<u>Lap</u>	<u>Shoulder</u>	<u>Both</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Did you remove any of the safety belts after the car started and drive without the belts fastened?

Yes No

If No, go to Question 9.

If Yes, explain which one and state

reasons _____

A. Did you fasten the belt again?

If No, go to Question 9.

B. Did you refasten the belts because of the flashing light and buzzer?

Light

Buzzer

Both

Yes No

Yes No

Yes No

C. Do you believe that the light alone would have been sufficient to encourage you to refasten your belt?*

Yes No

D. Would you have preferred only a light and no buzzer?*

9. Do you believe this interlock device is a good way to increase safety belt usage?

Give reasons, if possible _____

10. If this interlock device came as standard equipment in your private car, would you:

Use it Modify it

How would you have done this? _____

11. If all new cars were required to have such a device, would you object?

<u>Yes</u>	<u>No</u>	<u>Please explain your general reaction to</u>
<input type="checkbox"/>	<input type="checkbox"/>	<u>this device</u> _____

12. Are lap belts (and shoulder belts) in the private automobile you drive?

	<u>Car 1</u>	<u>Car 2</u>
Lap Belt	<input type="checkbox"/>	<input type="checkbox"/>
Shoulder Belt	<input type="checkbox"/>	<input type="checkbox"/>

13. Percent of times you wear your safety belts while driving or riding in a:

<u>0</u>	<u>Less than 1/4 of all your trips</u>	<u>Between 1/4 and 1/2 of all your trips</u>	<u>Between 1/2 and 3/4 of all your trips</u>	<u>Between 3/4 and almost always of all your trips</u>	<u>Always</u>
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Private Car (1)

Lap Belt	<input type="checkbox"/>					
Shoulder Belt	<input type="checkbox"/>					

Private Car (2)

Lap Belt	<input type="checkbox"/>					
Shoulder Belt	<input type="checkbox"/>					

Government Car

Lap Belt	<input type="checkbox"/>					
Shoulder Belt	<input type="checkbox"/>					

14. Please state the reasons you either use or don't use safety belts:

Lap Belt

Shoulder Belt

16. If you now use seat belts, can you recall when and why you started to use them?
